

REMARKS

Initially, Applicants would like to express their appreciation to Examiner Corsaro for the courtesies extended to Applicants' attorney during a telephone interview on August 19, 2004. Although agreement was not reached on whether Applicants' claim 1 overcame the cited references, Examiner Corsaro did agree to take more points into consideration during his review.

Claims 1, 2, 4, 6-17, 19-25, 28-38, and 40-43 are pending in the application. Applicants respectfully request additional consideration and review of the claims in view of the following remarks.

Rejections Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1, 2, 4, 6-8, 10-15, 17, 19-25, 28-33, and 40-43 under 35 U.S.C. §103(a) as being unpatentable over Kanai (U.S. 5,386,589) in view of various other references. Applicants respectfully traverse this rejection.

As stated in the previous amendment, one potential use of Applicants' claimed invention is to provide a method of power control for the reverse link outer loop in wireless communications networks. An important aspect of Applicants' claimed invention is to perform power control as a function of a second order statistic of a signal-to-noise ratio of a received signal. This important aspect of Applicants' claimed invention is set forth, for example, in independent claim 1 that calls for determining a signature of a communications channel in which "the signature of the communications channel is a second order statistic of a signal-to-noise ratio of a signal received from the communications channel, ... performing power control ...". See, for example, page 3, lines 7-13 in Applicants' specification where this aspect of the invention is discussed.

Claim Rejections under Kanai and Minde

Claims 1, 2, 4, 6, 11-13, 17, 19-20, 23-25, 29, 31, 38, 40, and 43 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kanai (U.S. 5,386,589) in view of Minde et al. (U.S. 6,157,830). The Kanai reference, like

Applicants, is generally concerned with power control in a wireless network. In Kanai, transmission power is controlled by measuring the average bit error rate or a carrier to interference ratio and comparing either parameter to predetermined thresholds. Transmission power is increased or decreased by a predetermined amount based on how the average bit error rate or carrier to interference ratio compares to the predetermined thresholds.

The Examiner has cited the Minde reference for disclosing a temporal processing stage that uses statistical methods and speech quality-related parameters, wherein the speech quality-related parameters carry information about properties such as signal-to-noise ratio. The Examiner asserts that the output of the temporal processing constitutes "a signature of a communications channel, wherein the signature of the communications channel is a second order statistic of a signal-to-noise ratio of a signal received from the communications channel".

In the Office Action, the Examiner contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kanai with Minde's teachings. Applicants thus understand it to be the Examiner's position that it would have been obvious to modify the transmission power control system from Kanai to include a temporal processing stage as disclosed by Minde. Applicants assert that even if the cited references could be combined, the resulting combination would not embody Applicants' inventive teachings nor anticipate Applicants' claims. Furthermore, Applicants submit that there is no motivation to combine Kanai and Minde.

Applicants respectfully traverse the rejection on two grounds.

First, neither Kanai nor Minde teach or suggest Applicants' claim 1 limitation that recites, "performing power control over the communications channel wherein the power control compares a metric value and a target metric value, such that the target metric value is adjusted as a function of the determined signature of the communications channel". Contrary to Applicants' claim 1, Kanai discloses that a signal quality is indicated by the average bit error rate, and average bit error rate is measured and held constant for power control

by keeping average bit error rate between two rate threshold values (i.e., LV1 and LV2), where LV2 is greater than LV1 by a predetermined difference. Transmission power is increased or decreased by a predetermined amount based on how the average BER compares to LV1 and LV2, as stated in column 7, lines 50-68 and column 8, lines 1-15. Therefore Kanai does not compare a metric value to a target metric as required by Applicants' claim 1. Combining Kanai with Minde does not cure these deficiencies.

Second, the Office action suggests that there is a motivation to combine Kanai with Minde—namely “allowing the system to account for fast fading, or interference, because the quality of the link is not shown by a mere averaging of such a parameter”. Applicants respectfully submit that the teachings in Kanai and Minde provide no basis to conclude that a person of ordinary skill in the art would use Minde's temporal processing to facilitate Kanai's method of transmission power control, thereby arriving at the subject matter of Applicants' claim 1.

Specifically, the problems that the references address are so different that the teachings provide no motivation for the person of ordinary skill to combine these references. Kanai addresses the problem of providing transmission power control in a cellular network while keeping signal quality constant. Kanai teaches that a signal quality is indicated by the average bit error rate, and average bit error rate is measured and held constant for power control by keeping average bit error rate between two rate threshold values (i.e., LV1 and LV2), where LV2 is greater than LV1 by a predetermined difference. Transmission power is increased or decreased by a predetermined amount based on how the average BER compares to LV1 and LV2.

Rather than addressing problems that involve transmission power control as done by Kanai, it would appear that the problem being addressed by Minde is to provide a more accurate method of estimating speech quality in a cellular network. Minde measures radio link parameters (e.g., BER, FER, etc.) and processes these parameters via a complex multi-stage process (i.e., temporal processing, correlation processing and estimator) in estimating speech quality. Minde discloses the use of statistical analysis techniques such as determining

the maximum value, minimum value, mean value, standard deviation, etc.”, as part of the temporal processing.

How would the person of ordinary skill in the art be motivated to combine a solution that provides transmission power control with another that teaches estimating speech quality to achieve Applicants' claim 1? Applicants assert that he would not be motivated for the following reasons:

- Kanai uses the average bit error rate, a first order statistic, as the parameter to be held constant for transmission power control. Kanai makes no mention of second order statistics or a signal-to-noise ratio, as recited in Applicants' claim 1, nor is there a teaching in Kanai to suggest that there would be an improvement in power control with second order statistics or a signal-to-noise ratio.
- Kanai teaches controlling power to maintain signal quality, which is not the same as estimating speech quality as taught by Minde.
- Kanai does not suggest any problem relative to the accuracy of the measurement of average bit error rate used in power control. In fact, Kanai discloses that the bit error rate is readily measured by transmitting through the communications channel a bit sequence having a predetermined pattern, as stated in column 2, lines 36-39.
- The problems addressed by Kanai seem to relate to the deterioration in signal quality that occurs from interference. The teachings of Kanai adequately address these problems without Minde's teachings.
- Minde makes no mention of transmission power control nor is there a teaching in Minde to suggest that there would be an improvement in estimating speech quality with transmission power control, or visa versa.

The Examiner has stated that there is a motivation to combine Kanai with Minde because doing so allows the system to account for fast fading, or interference, because the quality of the link is not shown by a mere averaging of

such a parameter, as stated in Minde column 2, lines 14-60. Applicants disagree. Minde states that “the relationship between the digital communications link and speech quality is not solely dependent on a time averaged BER”. Minde does not address signal quality and the effect of a time averaged BER.

Given that Kanai’s technique doesn’t suffer from the problems that Minde address, the person of ordinary skill in the art would not be led to try to improve Kanai’s techniques with Minde’s teachings. So, why would the person of ordinary skill in the art be motivated to modify Kanai with Minde’s temporal processing teachings? Applicants submit that such motivation could only arise with a hindsight reconstruction based on Applicants’ own teachings (i.e., to perform power control as a function of a second order statistic of a signal-to-noise ratio of a received signal).

In short, there is no basis on which the person skilled in the art would be led to use temporal processing for any reason in Kanai, let alone in the particular way called for in Applicants’ claim 1. Only in hindsight based on Applicants’ teachings would a person skilled in the art be motivated to change Kanai’s method by combining it with Minde.

Accordingly, since a person skilled in the art would not look to combine the references as suggested, Applicants submit that the combination and resultant rejection are improper. Thus, Applicants respectfully request withdrawal of the rejection of claim 1.

In view of the foregoing, claim 1 is believed to be patentable over the combination of Kanai and Minde. Since claims 2, 4, and 6 depend from claim 1, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1. Therefore, the Kanai and Minde combination does not embody Applicants’ claims 2, 4, and 6.

Independent claim 11 has a limitation similar to that in independent claim 1. For example, claim 11 recites, “developing a second order statistic from the received signal based on a signal-to-noise ratio of the received signal”. The Kanai and Minde combination does not teach or suggest this limitation for the above-mentioned reasons and, as such, claim 11 is also believed to be allowable

for the reasons set forth above for claim 1. Since claims 12-13 depend from claim 11, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

Independent claim 17 has a limitation similar to that in independent claim 1. For example, claim 17 recites “measuring a signature of a fading environment, wherein the measuring includes calculating a standard deviation value of a signal-to-noise ratio of a received signal”. The Kanai and Minde combination does not teach or suggest this limitation for the above-mentioned reasons and, as such, claim 17 is also believed to be allowable for the reasons set forth above for claim 1. Since claims 19, 20, and 23 depend from claim 17, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

Independent claim 24 has a limitation similar to that in independent claim 1. For example, claim 24 recites “wherein the controller further determines the signature of the communications channel by collecting signal-to-noise ratio values of the received signal and by calculating a second order statistic of the collected signal-to-noise ratio values”. The Kanai and Minde combination does not teach or suggest this limitation for the above-mentioned reasons and, as such, claim 24 is also believed to be allowable for the reasons set forth above for claim 1. Since claims 25, 29, and 31 depend from claim 24, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

Independent claim 38 has a limitation similar to that in independent claim 1. For example, claim 38 recites “a controller for (a) developing a second order statistic from the received signal, wherein the controller calculates the second order statistic of collected signal-to-noise ratio values of the received signal”. The Kanai and Minde combination does not teach or suggest this limitation for the above-mentioned reasons and, as such, claim 38 is also believed to be allowable for the reasons set forth above for claim 1. Since claims 40 and 43 depend from claim 38, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 1, 2, 4, 6, 11-13, 17, 19-20, 23-25, 29, 31, 38, 40, and 43.

Claim Rejections under Kanai, Minde, and Wang

Claims 7-8, 10, 14-15, 28, 32-33, and 41-42 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kanai (U.S. 5,386,589) in view of Minde et al. (U.S. 6,157,830), and further in view of Wang et al. (U.S. 6,084,904). The Kanai and Minde combination does not teach or suggest the limitations recited in Applicants' independent claims 1, 11, 17, 24, and 38 for the above-mentioned reasons. Wang does not cure the deficiencies noted above for Kanai and Minde. Since claims 7-8 and 10 depend from claim 1, claims 14-15 depend from claim 11, claims 28 and 32-33 depend from claim 24, and claims 41-42 depend from claim 38, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for the respective independent claims. Therefore, the combination of Kanai, Minde and Wang still does not embody Applicants' claims 7-8, 10, 14-15, 28, 32-33, and 41-42.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 7-8, 10, 14-15, 28, 32-33, and 41-42.

Furthermore, Applicants respectfully object to the Examiner taking official notice as per claim 28. Applicants' method of power control for the reverse link outer loop in wireless communications networks is not common knowledge nor is it practiced in the art. Applicants respectfully submit that a reference document should be cited that shows prior art as the basis for the rejection of Applicants' claim.

Claim Rejections under Kanai, Minde, and Dohi

Claims 21, 22, and 30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kanai (U.S. 5,386,589) in view of Minde et al. (U.S. 6,157,830), and further in view of Dohi et al. (U.S. 6,341,224). The Kanai and

Minde combination does not teach or suggest the limitations recited in Applicants' independent claims 1, 11, 17, 24, and 38 for the above-mentioned reasons. Dohi does not cure the deficiencies noted above for Kanai and Minde. Since claims 21-22 depend from claim 17 and claim 30 depends from claim 24, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for the respective independent claims. Therefore, the combination of Kanai, Minde and Dohi still does not embody Applicants' claims 21, 22, and 30.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 21, 22, and 30.

Allowed Claims

Applicants appreciate the Examiner's allowance of claims 34-37 and indication that claims 9 and 16 would be allowable if rewritten in independent form including all limitations of the respective base and intervening claims.

Applicants have opted not to rewrite claims 9 and 16 in independent form. Claims 1 and 11 are now believed to include the allowable subject matter as previously discussed. In view of the remarks set forth herein, Applicants believe that claims 9 and 16 are allowable in their present form by virtue of their dependency from the base claims. As such, for reasons related to prosecution efficiency, Applicants have not amended these dependent claims at the present time, but instead would prefer to reserve the right to do so in the future as appropriate.

Conclusion

In view of the foregoing remarks, Applicants submit that claims 1, 2, 4, 6-17, 19-25, 28-38, and 40-43 are in condition for allowance, and reconsideration is therefore respectfully requested. If there are any outstanding issues that the Examiner feels may be resolved by way of a telephone conference, the Examiner is invited to contact the undersigned to resolve the issues.

Respectfully submitted,

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Sharon L. Lobosco Date 8/23/04
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